

Tabletop Role-Playing Games for Social Skill Development in Adult Learning: A Scoping Review

Flavio Manganello, Ph.D., National Research Council of Italy, Institute for Educational Technology, Genova, Italy

Davide Capobianco, Department of Philosophy and Cultural Heritage, University of Venice “Ca’ Foscari”, Venice, Italy

Introduction

This scoping review aims to map the literature on the use of TTRPGs in adult learning, with a focus on the development of social skills. The study aims to reflect on the existing literature by following precise and recognized methodologies (see Section 2 about methods) and reasoning on the state of the art from an interdisciplinary perspective, giving the adult training and learning purpose as a starting point.

Rationale

Games have long been acknowledged as potential tools in adult learning, contributing to both individual development and collaborative engagement within professional contexts (Hwang & Chen, 2022). Research on game-based learning has extensively examined formats such as digital games, serious games, and board games, suggesting their capacity to enhance communication, creativity, problem-solving, and critical thinking (Clark et al., 2016; Plass et al., 2015; Sailer & Homner, 2020).

Tabletop role-playing games (TTRPGs) constitute a distinct analog modality based on cooperative storytelling, character-based decision-making, and collective problem-solving. In these games, players assume fictional roles and contribute to a shared narrative guided by a Game Master. Common examples include *Dungeons & Dragons* and *Pathfinder*, which rely on interpersonal communication, turn-taking, and joint strategy development. TTRPGs appear to engage participants in core dimensions of social interaction, such as empathy, communication, teamwork, and reflection (Markiewicz et al., 2024; Haarman, 2022).

A central feature of TTRPGs is their cooperative structure, which indicates potential value in contexts where teamwork is essential (Ardito & Dron, 2024). Reasoning, strategy formulation, narrative construction, and the selection of communicative registers are enacted collectively (Haarman, 2022; Deterding & Zagal, 2018). These dynamics can be interpreted within the perspective of cooperative learning, where the game functions as a social laboratory that allows experimentation and adjustment of interpersonal strategies (Kim & Hanneman, 2023).

Role-playing may also support identity exploration and engagement with challenges that mirror those encountered in organisational and workplace settings (Reissner & Armitage-Chan, 2024). Iteration plays a critical role, as players participate in multiple sessions while inhabiting the same character. This may enable the reconfiguration of habitual action patterns and the development

of new behavioural responses (Kim & Hanneman, 2023; Mezirow, 2003; Bateson, 2000). Such processes can activate strategic thinking accompanied by critical reflection (Villalba, 2017). The presence of divergent viewpoints, unforeseen events, and narrative crises requires improvisation when initial plans fail, creating forms of learning by doing consistent with Deweyan traditions (Dewey, 2024; Fioravanti et al., 2021; Haarman, 2022).

Drawing on competence frameworks such as LifeComp and the European Commission's Key Competences for Lifelong Learning (Fredriksson & Hoskins, 2008; Pellegrini & Vitali, 2021; Sala et al., 2020), these characteristics indicate the relevance of TTRPGs for developing social and cognitive dimensions of learning.

This review focuses specifically on social skills. In line with these frameworks, social skills are understood as interpersonal abilities that support cooperation and effective communication in educational and professional environments. Relevant competencies include joint decision-making, turn-taking, conflict management, and clear communication, together with empathy, perspective-taking, and forms of leadership that involve coordination and shared responsibility. These competencies align closely with the interactional demands created by TTRPGs, where narrative co-construction and collective decision-making require sustained social engagement.

Social skills differ from employability skills, which refer to task-specific or occupationally oriented behaviours (Sala et al., 2020). TTRPGs primarily promote interpersonal interaction, role embodiment, and shared narrative creation, making them particularly suited to the development of social competencies rather than job-specific abilities. LifeComp positions such competencies as foundational for personal fulfilment and active citizenship (Pellegrini & Vitali, 2021).

Despite the growing interest in game-based pedagogies, the role of TTRPGs in adult learning remains insufficiently mapped. Existing contributions are dispersed across small-scale studies and exploratory interventions, with no comprehensive synthesis of how TTRPGs support social competencies. This review addresses this gap by offering a structured evidence map, clarifying the mechanisms through which TTRPGs may contribute to social learning, and identifying implications for adult education. Without such mapping, practitioners lack evidence-based guidance for implementing TTRPGs, and researchers encounter challenges in building on an emerging but fragmented field.

Objectives

The review is structured according to the Population, Concept, and Context (PCC) framework recommended by the Joanna Briggs Institute (Peters et al., 2020; Pollock et al., 2023) to ensure methodological clarity and consistency.

The population of interest includes adult learners, educators, trainers, and professionals involved in formal education, workplace training, or lifelong learning initiatives. The concept centers on the use of TTRPGs, including analog formats such as *Dungeons & Dragons*, to support the development of interpersonal and cognitive skills. The context comprises educational and training environments oriented towards adult learning.

The review is guided by the following research questions:

RQ1. To what extent have TTRPGs been reported to support the development of social competencies in adult learning contexts?

RQ2. In which adult learning environments have TTRPGs been implemented, and what forms has this implementation taken?

RQ3. What methodological frameworks and assessment tools have been employed to study the integration of TTRPGs in adult learning?

RQ4. What social and cognitive learning outcomes, as well as implementation challenges, have been documented in empirical studies on TTRPGs in adult learning?

The research questions were derived deductively from the PCC framework. “Application” refers to the purposes for which TTRPGs are used in adult learning. “Implementation” concerns how TTRPG-based activities are structured and delivered in practice. “Integration” examines the methodological and instructional tools that support the incorporation of TTRPGs within educational or training settings. Through this investigation, the review seeks to offer a comprehensive overview of the field and identify gaps in the literature that can inform future research and educational innovation.

Methods

This study is grounded in a scoping review methodology, as originally conceptualized by Arksey and O’Malley (2005) and subsequently refined by Levac et al. (2010). Rather than synthesizing evidence to address a focused causal or clinical question, scoping reviews are designed to systematically map the breadth and nature of existing literature, identify key concepts and gaps, and clarify the overall scope of a field, a purpose that sets them apart from systematic reviews and meta-analyses (Peters et al., 2020). Given that the available literature on TTRPGs in adult learning is notably heterogeneous in terms of contexts, methodological choices, and outcomes reported, this approach appeared well suited for charting what has been studied so far, how it has been studied, and with what results.

To ensure consistency and transparency in reporting, the review followed the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews* (PRISMA-ScR) guidelines (Tricco et al., 2018). A protocol defining the approach for identifying, selecting, and analyzing relevant studies was developed prior to the review. Although it has not been formally registered in a public repository, all methodological details remain available upon request.

Eligibility Criteria

Studies were included if they examined the use of TTRPGs, such as *Dungeons & Dragons* or other pen-and-paper RPGs, to support the development of social skills among adult learners (aged 18 or older). Eligible studies focused on competencies such as collaboration, communication, empathy, leadership, problem-solving, or critical thinking, and were situated in

contexts including adult education, higher education, vocational training, workplace learning, lifelong learning, or continuing education.

The review considered empirical research based on quantitative, qualitative, or mixed methods approaches. It included peer-reviewed journal articles, conference proceedings, institutional reports, and relevant grey literature. No restrictions were applied to the year of publication. Only studies published in English and with full-text availability were included.

Studies were excluded if they focused on live action role-playing games, digital RPGs (e.g., MMORPGs or video games), or board games without role-playing elements. Digital RPGs were excluded when they consisted of video games with pre-designed mechanics. Text-based asynchronous TTRPGs, which replicate tabletop dynamics through written interaction, were included because they preserve the core collaborative and improvisational features of analog TTRPGs. Also excluded were theoretical or opinion-based pieces lacking empirical data, editorials, interviews, conference summaries without data, and studies with participants under 18 unless explicitly framed within adult learning. Clinical or therapeutic studies were excluded unless directly linked to educational or training contexts.

Although the review prioritised empirical studies, one literature review (Funk, 2021) was included as an exception. This source met the Concept and Context criteria of the review, as it examined the use of TTRPGs for interpersonal and leadership skill development in adult training. Despite methodological differences, it offered relevant thematic insights aligned with the mapping purpose of a scoping review.

Information Sources and Search Strategy

The literature search was conducted using Scopus and Web of Science (Clarivate - All Databases), without date restrictions. The final search was completed on January 30, 2025. Manual searches of reference lists and targeted Google queries were also carried out to identify additional sources. Sources identified through Google were screened using the same eligibility criteria as database records. Only documents providing primary empirical data, with explicit methods and identifiable participants, were included. Ethical approval was not required for this study, as it exclusively involved the analysis of publicly available literature.

Search strings combined terms related to TTRPGs, social skills, and adult learning. For Scopus, the TITLE-ABS-KEY field was used to retrieve studies containing relevant keywords in the title, abstract, or keywords section. The search string combined terms related to tabletop role-playing games (e.g., *Dungeons & Dragons*, pen-and-paper RPG) with those associated with social skills development (e.g., collaboration, communication, teamwork, empathy, leadership) and the broader universe of adult learning and training. This included both educational and professional development contexts, encompassing adult education, higher and university education, lifelong learning, vocational training, and workplace-based learning. For Web of Science (WoS), the TS (Topic Search) field was applied, ensuring that both titles and abstracts were searched for the same set of keywords.

Selection of Sources of Evidence

Two separate search strategies were implemented. The first involved database searches in Scopus (n = 53) and WoS (n = 16), resulting in 58 unique records after deduplication. These were imported into Rayyan and screened by title and abstract. The second strategy consisted of a manual search via Google, which identified 15 additional records. These were assessed directly at the full-text level. Screening was conducted independently by two reviewers, following a calibration phase and consensus-based resolution. In total, 33 studies were included for full-text analysis.

Data Charting and Synthesis Approach

Data extraction was conducted using a structured charting form informed by the PCC framework and the JBI Manual for Evidence Synthesis (Aromataris et al., 2024). The charting categories included bibliographic details, study aims, methodology, participant characteristics, intervention features, reported outcomes, and alignment with the review questions. Two reviewers independently completed the data charting, followed by regular comparison and discussion to ensure accuracy and consistency. In line with the exploratory nature of the scoping review, no formal quality appraisal of the sources was performed (Tricco et al., 2016).

The synthesis of results was guided by a qualitative content analysis approach based on Elo and Kyngäs (2008), using a deductive framework structured around the PCC model. The extracted data were analyzed across predefined thematic categories that reflected the key dimensions of the review: the types of social skills addressed, learner engagement, implementation strategies, instructional design, session structure and dynamics, evaluation methods, and reported challenges or limitations.

The synthesis explored how TTRPGs contribute to the development of social competencies in adult learning, including collaboration, communication, empathy, and leadership. It also examined how these games support active participation and foster conditions conducive to problem-solving and decision-making. Finally, the analysis addressed the ways in which interventions are structured and evaluated, highlighting both effective practices and recurring challenges in the educational and professional use of TTRPGs.

Findings

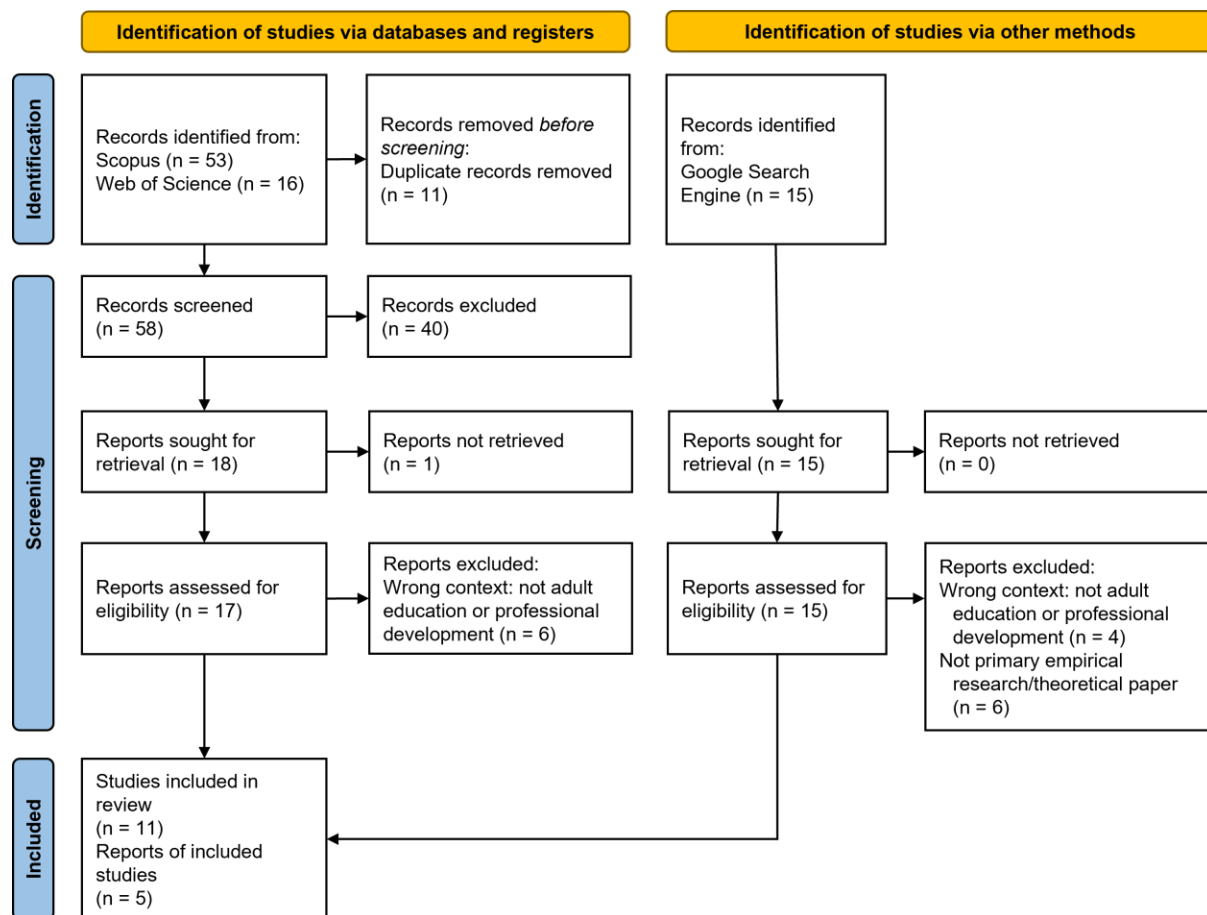
Selection of Sources of Evidence

At the full screening stage, 16 studies and reports were excluded. From the pool of records retrieved through Scopus and WoS, six studies were excluded because they did not focus on adult learning or professional development (Causo & Quinlan, 2021; Drachen & Smith, 2008; Henning et al., 2024; Kilmer et al., 2024; Muramatsu & Ackerman, 1998; Torres-Rodríguez & Martínez-Granada, 2022), and one study was excluded due to lack of full-text availability (Clarke et al., 2018). Among the reports identified through the manual search on Google, four were excluded for being outside the scope of the review (Arenas et al., 2022; Bautista, 2022; Howell,

2023; Ott, 2022) and six were excluded because they were not primary empirical studies or theoretical papers (Kapitany et al., 2022; Shoenberger, 2024; Sousa et al., 2023; Taylor, 2021; Winardy & Septiana, 2023; Yuliawati et al., 2024).

The final selection included 11 studies from Scopus and WoS and five reports from the Google search, for a total of 16 sources of evidence that constitute the basis for this scoping review. The PRISMA flow diagram (Figure 1) summarizes the selection process and reasons for exclusion, ensuring transparency and reproducibility.

Figure 1.
PRISMA Flow Diagram



Note. Demonstrates the screening process, including reasons for exclusions and final sources of evidence.

The publication timeline of the included studies ranges from 2014 (Zdravkova, 2014) to 2024 (e.g., Adelakun et al., 2024; Hazlett et al., 2024; LaLone & Touns Dugas, 2024), with an increase in scholarly interest evident from 2021 onward (12 of 16 studies). The majority of studies originated from English-speaking countries, particularly the United States (7 studies; e.g., Burrell, 2021; Funk, 2021; Spinelli, 2018).

The studies addressed a variety of objectives related to social and cognitive skill development. Common aims included exploring skill transference from gameplay to real-life contexts (e.g., Mackey, 2023a, 2023b), investigating emotional or reflective outcomes (e.g., Clarke et al., 2019; Winardy et al., 2024), evaluating soft skills development such as collaboration, empathy, and leadership (e.g., Funk, 2021; Veldthuis et al., 2021), and designing or analyzing educational interventions using TTRPGs (e.g., Lopes, 2015; Zdravkova, 2014). Some studies also examined broader themes such as digital writing (McKenzie, 2023), gender in creative industries (Sezen et al., 2024), and leadership training (Funk, 2021).

All studies involved adult participants (aged 18 or older), primarily university students or young adults engaged in formal or informal learning contexts (e.g., Burrell, 2021; Clarke et al., 2019; McKenzie, 2023). Sample sizes ranged from six to 134 participants, with most studies (10 out of 16) involving fewer than 20 (e.g., Adelakun et al., 2024; Hazlett et al., 2024; Mackey, 2023a). Several studies also included professionals, creative workers, or postgraduate students, highlighting the applicability of TTRPGs across diverse adult learning profiles (e.g., Sezen et al., 2024; LaLone & Touns Dugas, 2024; Zdravkova, 2014).

A wide range of research methods were used. The majority adopted qualitative approaches, including exploratory studies, single-case designs, action research, and phenomenological interviews (e.g., Hazlett et al., 2024; Mackey, 2023b; Sezen et al., 2024; Winardy et al., 2024). A few studies applied mixed methods, integrating pre-post measures, surveys, and qualitative feedback (e.g., Adelakun et al., 2024; Veldthuis et al., 2021). Only one study used a purely quantitative correlational design (Spinelli, 2018). This diversity reflects the exploratory nature of the field and its emphasis on participant experiences and contextual interpretation.

10 studies included a TTRPG-based intervention, often based on *Dungeons & Dragons*, delivered as one-shot sessions, short workshops, or integrated into courses (e.g., Adelakun et al., 2024; Lopes, 2015; McKenzie, 2023; Sezen et al., 2024). Others relied on participants' prior experience or reflections on ongoing campaigns without formal facilitation (e.g., Burrell, 2021; Hazlett et al., 2024; Winardy et al., 2024). Intervention formats varied widely in duration and structure, from 15-minute online trials (You et al., 2024) to multi-session campaigns (Mackey, 2023a) and semester-long integrations (Zdravkova, 2014).

The majority of interventions were situated in higher education, particularly within humanities, computer science, and teacher education programs (e.g., Clarke et al., 2019; Lopes, 2015; Veldthuis et al., 2021; Zdravkova, 2014). Other studies were conducted in informal learning settings, community-based environments, or professional development contexts, reflecting the versatility of TTRPGs as a learning tool (e.g., Burrell, 2021; Hazlett et al., 2024; Sezen et al., 2024).

Most studies used self-reported data or qualitative reflections to assess outcomes such as collaboration, assertiveness, emotional engagement, or leadership development (e.g., Mackey, 2023a; Funk, 2021; Winardy et al., 2024). A few included standardized instruments, such as the PANAS, Peterson Assertiveness Questionnaire, or the Creativity Scale, to provide structured outcome measures (e.g., Adelakun et al., 2024; Spinelli, 2018; You et al., 2024). Others relied

on thematic analysis, observations, or post-session feedback (e.g., Burrell, 2021; Sezen et al., 2024).

Results of Individual Sources of Evidence

Adelakun et al. (2024) conducted a mixed-methods pilot study with seven university students to assess whether *Dungeons & Dragons* could foster assertiveness. Over six sessions, including one with a disruptive player, participants showed modest improvements in assertive behaviors. The game was used as a cooperative training tool, combining character roleplay and conflict scenarios. The methodology involved pre/post surveys and behavioral coding. The intervention appeared to enhance communication and confidence, though results were limited by sample size and logistical constraints.

Burrell (2021) explored problem-solving skill development in seven TTRPG-experienced young adults during an informal two-hour D&D session. Observational and interview data indicated gains in social problem-solving, especially during narrative conflict. The study highlighted the role of collaborative gameplay in shaping interpersonal strategies. Qualitative methods were central to capturing these developments. Participants also reported reduced anxiety and improved communication skills.

Clarke et al. (2019) implemented D&D mechanics in a university design thinking course with eleven students. Using participatory design, students engaged in self-reflection through character sheets, quests, and scenario-based challenges. While the main focus was reflective learning, findings suggested positive effects on collaboration and group problem-solving. Qualitative feedback and focus groups supported the use of these tools. The study led to the development of a digital version of the reflection tool.

Funk (2021) conducted an integrative review of 77 studies examining TTRPGs for leadership development. The analysis revealed that roleplay promotes communication, emotional intelligence, and group cohesion across educational and professional contexts. Studies reviewed described narrative-based experiential learning, emphasizing adaptability and creativity. Although no primary data was collected, the review identified consistent evidence of social and cognitive skill development. The lack of longitudinal studies was noted as a limitation.

Hazlett et al. (2024) interviewed 15 adult TTRPG players to examine how gameplay functions as a meaningful occupation. Participants described improved teamwork, communication, and social confidence in community and recreational settings. Roleplay emerged as a vehicle for interpersonal engagement and creative expression. Thematic coding highlighted enhanced public speaking and social organization. Although not focused on formal education, the study revealed the potential of TTRPGs in occupational development.

LaLone and Toups Dugas (2024) explored how TTRPGs support older learners in computing and emergency management education through qualitative interviews. The findings emphasized how narrative play fosters systems thinking and social learning. TTRPGs bridged analog and digital literacy, helping learners connect with technical content through collaborative

storytelling. The study identified outcomes such as communication improvement and identity exploration. It proposed TTRPGs as engaging tools for lifelong learning and re-skilling.

Lopes (2015) designed a TTRPG session for 16 computer science students to teach data survivability. The intervention, set in a higher education context, promoted teamwork, motivation, and technical learning. Structured observation and feedback tools were used. Role-based problem-solving was integrated with course content, supporting communication and applied knowledge. However, scripted gameplay and weak improvisation skills were noted as constraints for implementation.

Mackey (2023a) used interviews and journal prompts with six adult D&D players to examine how in-game learning transfers to real life. Over five sessions, participants developed teamwork, empathy, and leadership skills. Collaborative problem-solving and rotating leadership were central to the intervention. Narrative analysis revealed consistent themes of social development. The study supported the educational potential of structured TTRPG use in adult learning.

Mackey (2023b) conducted a similar study during an online D&D campaign, reinforcing earlier findings on transferable skills. Participants reflected on leadership, communication, and problem-solving gains, achieved through guided narrative play. Skills developed during sessions were linked to real-life contexts. The analysis confirmed the role of TTRPGs in social and emotional learning. The online format also highlighted accessibility benefits.

McKenzie (2023) studied a six-week D&D-inspired worldbuilding course with 12 first-year university students, focusing on digital literacies. Students collaborated via wiki-based writing, integrating social structure design and peer feedback. The project supported communication, empathy, and academic confidence. Reflections and curricular mapping demonstrated alignment with critical and digital competencies. Despite technical challenges, outcomes indicated strong engagement and skill development.

Sezen et al. (2024) organized a half-day TTRPG workshop with 10 women from the creative industries to explore gender and professional barriers. Fictional roleplay enabled participants to reflect on collaboration, leadership, and structural inequality. In-game dynamics facilitated empathy and group problem-solving. Action research methods supported a participatory approach. Results underscored the use of TTRPGs as inclusive tools for exploring social issues in professional development.

Spinelli (2018) surveyed 85 university students, comparing TTRPG players and non-players on creativity, self-efficacy, and social skills. While no difference emerged in self-efficacy or social ability, players scored significantly higher in creativity. Participants described collaborative storytelling and problem-solving as core to their experience. Mixed methods highlighted benefits such as time management and communication. The study pointed to executive functioning as a promising area for further research.

Veldthuis et al. (2021) piloted a D&D module in a computer science course with 55 students. Over three lectures, students engaged in character design, narrative collaboration, and graded

sessions. The mixed-methods study revealed improved empathy, creativity, and teamwork. Surveys and open-ended feedback confirmed positive attitudes toward soft skill development. While students responded well to creative writing, traditional reading tasks were less well received.

Winardy et al. (2024) explored the emotional impact of text-based online TTRPGs through interviews with eight Indonesian players. Participants experienced strong emotional engagement and identity reflection via narrative immersion. Discord-based gameplay encouraged empathy and perspective-taking. Thematic analysis categorized emotional responses and “bleed” effects across in-game and real-world experiences. Findings highlighted the potential of asynchronous play for emotional and social development.

You et al. (2024) assessed how AI Game Master (GM) prompts influenced player emotions in 13 TTRPG participants. Three short sessions were conducted using different ChatGPT-generated GM roles. PANAS results showed an increase in positive emotions, particularly with the second GM prompt. Participants also offered qualitative feedback on narrative dynamics. Language barriers limited negative emotional expression, but the findings suggest value in AI-enhanced facilitation.

Zdravkova (2014) examined the use of asynchronous TTRPGs in computer ethics courses with over 130 students. Forum-based roleplay simulated workplace challenges and ethical dilemmas. Students engaged in collaborative writing and discussion. The case study revealed enhanced critical thinking, communication, and ethical awareness. Descriptive feedback confirmed high engagement and suggested roleplay as a scalable strategy for teaching digital ethics.

RQ1. Use of TTRPGs to Foster Social Skills in Adult Learning

The included studies highlighted how TTRPGs support the development of social competencies such as collaboration, communication, empathy, leadership, and assertiveness. Adelakun et al. (2024) demonstrated improved assertiveness in higher education students, particularly through conflict-driven play. Mackey (2023a, 2023b) highlighted skill transfer to teamwork and leadership in social and professional contexts. Funk (2021), through a literature review, confirmed that TTRPGs are linked to the development of communication and emotional intelligence in leadership training.

Empathy and perspective-taking were central in the findings of Winardy et al. (2024), who studied emotional expression in text-based TTRPGs, and Sezen et al. (2024), who used roleplay to explore gender dynamics in creative industries. Hazlett et al. (2024) and Burrell (2021) reported gains in communication and social confidence, with a focus on problem-solving and conflict management. McKenzie (2023) and Clarke et al. (2019) documented improvement in peer interaction and group reflection, even when TTRPGs were used for writing or self-reflection tasks.

Teamwork and soft skill enhancement were also observed in Veldthuis et al. (2021), Lopes (2015), and Spinelli (2018), who found higher creativity scores among TTRPG players. Zdravkova (2014) showed that roleplay in computer ethics courses enhanced communication

and ethical awareness. LaLone and Toups Dugas (2024) added insights into how TTRPGs promote social understanding in tech learning contexts, while You et al. (2024) explored the emotional activation associated with roleplay, contributing indirectly to affective-social development.

RQ2. Implementation of TTRPGs in Adult Learning Environments

The studies reviewed described a wide variety of implementation strategies in both formal and informal learning contexts. Lopes (2015), Clarke et al. (2019), and Veldthuis et al. (2021) integrated TTRPGs into university courses using structured modules and collaborative scenarios. Mackey (2023a, 2023b) conducted weekly sessions with rotating leadership and reflective journaling.

Sezen et al. (2024) facilitated a one-day workshop using pre-defined characters to simulate industry-specific challenges. McKenzie (2023) designed an online course built around collaborative worldbuilding, while Clarke et al. (2019) used game mechanics to enhance student reflection. Burrell (2021) and Hazlett et al. (2024) studied informal applications in recreational settings.

You et al. (2024) introduced AI-based facilitation via ChatGPT, exploring its impact on affective engagement. LaLone and Toups Dugas (2024) described how TTRPGs helped older learners engage with digital literacy. Zdravkova (2014) offered an example of asynchronous integration through forum-based writing exercises.

Funk (2021) and Spinelli (2018) illustrated how narrative immersion and roleplay design support flexible adaptation across contexts. Facilitator preparation and learner engagement were identified as critical components for effective implementation.

RQ3. Methodological Approaches and Tools for Integration

In this section, “tools for integration” refers both to tools used *within* TTRPG practice (e.g., character sheets, scenario prompts), and to tools that support *educational integration* (e.g., reflection forms, structured observation grids, digital collaborative spaces).

Studies in this area used a range of methodological approaches to explore the role of TTRPGs in adult learning. Adelakun et al. (2024) and Veldthuis et al. (2021) employed mixed-methods, combining survey data with observations or feedback. Lopes (2015) used structured classroom observation, while Mackey (2023a, 2023b) drew on narrative analysis of journals and interviews.

Qualitative techniques were used extensively, as seen in Hazlett et al. (2024), Burrell (2021), and Winardy et al. (2024), who applied thematic and phenomenological analysis. Clarke et al. (2019) employed participatory design with group feedback, while McKenzie (2023) aligned course activities with curricular outcomes. Funk (2021) conducted a thematic synthesis of studies, and Sezen et al. (2024) used action research combined with survey and observational data.

Assessment tools included standardized instruments such as the Peterson Assertiveness Questionnaire (Adelakun et al., 2024), creativity and self-efficacy scales (Spinelli, 2018), and the Positive and Negative Affect Schedule (PANAS) for emotional tracking (You et al., 2024). PANAS is a validated self-report scale that measures momentary positive and negative affective states through 20 items (Watson et al., 1988). Its use in TTRPG studies supports the examination of emotional engagement. Other evaluation approaches included structured observations with feedback tools (Lopes, 2015), focus groups and qualitative feedback (Clarke et al., 2019), and behavioral coding alongside questionnaires (Adelakun et al., 2024).

In terms of tools, many studies adopted character sheets, role-based tasks, and scenario prompts to structure gameplay. Clarke et al. (2019) developed a reflection tool using D&D mechanics, and McKenzie (2023) used wiki-based collaborative writing. You et al. (2024) tested the integration of AI-generated prompts to support storytelling. Zdravkova (2014) implemented roleplay asynchronously through forum-based activities in a Web 2.0 learning environment. Students adopted roles in computer ethics scenarios and interacted over several weeks through written posts, maintaining core features of tabletop role play while participating at flexible times. This structure supported large cohorts and allowed students with different schedules to remain engaged.

RQ4. Evaluation of Social and Cognitive Outcomes and Reported Challenges

The studies reviewed reported various methods for evaluating learning outcomes. Assessment approaches ranged from standardized instruments to qualitative feedback, with most studies employing multiple evaluation methods to capture both quantitative and qualitative changes. Adelakun et al. (2024) and Spinelli (2018) used standardized scales to measure assertiveness and creativity. You et al. (2024) applied PANAS for emotional tracking. Zdravkova (2014) and Sezen et al. (2024) collected participation data and survey feedback. McKenzie (2023) and Clarke et al. (2019) used student self-assessments and reflections aligned with course objectives.

Improved communication, empathy, and problem-solving were common findings across studies including Mackey (2023a, 2023b), Hazlett et al. (2024), and Burrell (2021). Emotional expression and identity development were emphasized by Winardy et al. (2024), while LaLone and Touns Dugas (2024) linked gameplay to systems thinking and digital confidence. Funk (2021) and Lopes (2015) supported both social and cognitive learning through qualitative synthesis and observation.

Methodological challenges included small sample sizes where most studies included fewer than 20 participants, brief intervention periods where several studies employed single sessions, and over-reliance on self-report measures limiting objective assessment. Specific implementation limitations comprised logistical constraints with disruptive participants (Adelakun et al., 2024), technical challenges in online implementations (McKenzie, 2023), limited facilitator readiness and weak improvisation skills (Lopes, 2015), and cultural context considerations affecting generalizability (Winardy et al., 2024). Cross-sectional designs and potential selection bias further constrained causal inferences (Spinelli, 2018). Despite these issues, learner engagement was consistently high, and perceived value was evident across all contexts.

Discussion

Social Skills Development Through TTRPG Mechanisms (RQ1)

TTRPGs can foster social skill development through game mechanics that engage players in structured interpersonal interaction. Drawing on the LifeComp framework and the European Commission's Key Competences for Lifelong Learning, social skills are here operationally defined as collaboration, communication, empathy, leadership and negotiation (Fredriksson & Hoskins, 2008; Sala et al., 2020). These competencies are supported by the demands of narrative construction, the assumption of character roles and collective decision making, which require players to coordinate actions, articulate intentions, interpret others' perspectives and manage group dynamics.

Role-playing and empathy development operate through perspective-taking mechanisms where participants embody alternative viewpoints. Character inhabitation requires players to consider motivations and emotional states different from their own, encouraging systematic perspective-taking. The iterative nature of character development allows sustained exploration of alternative perspectives.

Collaborative problem-solving and negotiation skills emerge through distributed agency in TTRPG mechanics. TTRPGs require consensus-building among stakeholders with conflicting interests. Turn-taking structures facilitate active listening, while narrative constraints demand compromise and creative solution-finding. Communication and leadership competencies manifest through rotating facilitation roles, allowing organic leadership emergence based on situational demands.

The findings also indicate that TTRPGs may support transformative processes by allowing learners to inhabit alternative roles, confront unfamiliar perspectives and reflect on their assumptions within a low-risk fictional context. The combination of role adoption, structured reflection and negotiated meaning making provides a pathway through which narrative interaction can prompt critical reflection, a defining element of transformative learning (Mezirow, 2003). While preliminary, these insights suggest that TTRPGs can serve as structured opportunities for perspective change in adult education. This extends transformative learning theory (Mezirow, 2003) by demonstrating how roleplay mediates between individual reflection and collective meaning-making, creating learning experiences grounded in physical and social interaction.

Implementation Mechanisms and Critical Success Factors (RQ2)

Implementation evidence reveals that TTRPG effectiveness depends on specific structural and pedagogical conditions. Successful implementations shared common characteristics: structured narrative frameworks, rotating responsibility allocation, and embedded reflection processes.

Narrative structure emerged as critical. Implementations providing sufficient constraint to guide decision-making while maintaining flexibility demonstrated stronger outcomes. This indicates optimal narrative scaffolding balancing structure with agency. Facilitator preparation proved

essential, requiring both game mechanics knowledge and group process skills (Kolb, 1984). Multi-session formats allowed skill refinement, with optimal duration appearing to be between four and six sessions.

These findings indicate TTRPGs function as designed social laboratories creating controlled conditions for skill practice while maintaining relational dynamics.

Methodological Contributions and Research Innovation (RQ3)

The methodological landscape revealed innovations in evaluation tools tailored to roleplay contexts. Character sheets adapted for reflection, narrative analysis of gameplay transcripts, and structured observation protocols captured both process and outcome dimensions. Participatory formats in which learners contributed to scenario refinement generated richer insights into interactional dynamics.

However, methodological limitations constrain advancement. Small samples, brief interventions and reliance on self-report measures reduce generalizability. More rigorous designs, including longitudinal approaches and validated instruments specific to social competence development, are needed.

Empirical Contributions and Theoretical Implications (RQ4)

The empirical evidence supports the potential of TTRPGs as tools for social skill development across diverse educational settings. Transfer appeared strongest when implementations incorporated explicit activities linking in-game experiences with real-world contexts, consistent with experiential learning models (Kolb, 1984).

TTRPGs also provided structured opportunities for perspective shifts, where participants examined assumptions and engaged with contrasting viewpoints. These processes reflect mechanisms associated with transformative learning (Mezirow, 2003).

Recent reviews of game-based learning highlight a strong predominance of research on digital games and simulations, with comparatively limited attention to analog formats such as TTRPGs (Clark et al., 2016; Sousa et al., 2023). This imbalance suggests the need to broaden inquiry of non-digital, narrative-driven approaches.

Conceptually, TTRPGs can be understood as narrative experiential learning environments in which interaction, reflection and collective meaning-making reinforce social competence development.

Limitations and Future Research

This review followed PRISMA-ScR methodology and applied rigorous selection and synthesis processes. However, several limitations constrain the findings' generalizability and theoretical development.

Search limitations include potential missed sources due to database coverage constraints, English-language restriction, and temporal lag in emerging literature. The manual search component may have missed relevant grey literature.

Methodological constraints in primary studies significantly limit evidence quality. Small sample sizes (10 of 16 studies with fewer than 20 participants) restrict statistical power and generalizability. Predominant reliance on self-reported outcomes introduces bias, while few studies employed validated social competency measures. The prevalence of single-session interventions (6 of 16 studies) prevents assessment of skill retention, and absence of control groups (14 of 16 studies) limits causal inference.

Theoretical limitations include definitional inconsistency in social skills conceptualization, underdeveloped mechanism specification, and limited context generalizability given the predominance of English-speaking, higher education settings.

Despite these constraints, the inclusion of practice-based sources enhanced understanding of real-world TTRPG applications, providing a foundation for systematic research advancement in this developing field.

Future Directions and the ADVENTURE Framework

The present research pursues a broader investigation of the educational potential of TTRPGs, extending beyond a single game system. Examining multiple games and their respective rule sets, it explores how different systems and settings, including those other than Dungeons and Dragons, may shape learning processes or prove more suitable for specific educational purposes. This inquiry forms part of the ongoing validation of the ADVENTURE Framework (Capobianco & Manganello, 2025), which integrates pedagogical theoretical foundations, a heutagogical model, and a skills classification grounded in the LifeComp framework, drawing on insights from neuroscientific research and Self-Determination Theory (Deci & Ryan, 2012). The framework also encompasses a practical dimension, realized through gameplay sessions and observational tools such as the Adventurer's Journal.

Further work would benefit from larger sample sizes through multi-site studies, longer intervention periods with follow-up assessments, and validated measurement instruments. Comparative designs, including randomized controlled trials set against alternative training methods, would strengthen causal inference. Studies focused on how specific game mechanics contribute to competency development remain important for theoretical progress. Extending inquiry beyond higher education to workplace settings and diverse cultural contexts would help establish the broader applicability of TTRPG-based approaches in adult learning.

Conclusion

This review provides a systematic examination of TTRPGs in adult learning contexts, establishing their effectiveness for social skill development while identifying implementation factors and research needs. TTRPGs develop empathy through perspective-taking, enhance

negotiation skills through distributed decision-making, and foster leadership through rotating facilitation roles.

Effective implementation requires structured narrative frameworks, facilitator preparation in game mechanics and group processes, and multi-session formats with embedded reflection. Four to six sessions with explicit bridging activities connecting in-game experiences to real-world applications prove most effective. Small groups of six to fifteen participants ensure meaningful participation.

TTRPGs function as complements to traditional social skill training, requiring adaptation of character sheets and narrative tools for reflection. Multi-modal implementations combining face-to-face and online elements enhance accessibility while maintaining social learning benefits.

The evidence extends transformative learning theory by demonstrating how roleplay mediates individual reflection and collective meaning-making, positioning TTRPGs as complementary modalities within game-based learning approaches. TTRPGs function as cultural forms supporting professional identity formation and democratic participation processes.

Research priorities include randomized controlled trials comparing TTRPG interventions with established methods, development of validated assessment instruments for measuring social competency development, and longitudinal studies with extended follow-up periods. Studies examining specific game mechanics, expansion to workplace contexts, and cross-cultural investigations would advance understanding and application.

The findings establish TTRPGs as effective tools for adult social skill development, providing an evidence-based foundation for educational implementation while identifying research needs for field advancement.

References

- Adelakun, A., Miller, C. L., Peterson, H., & Manderfeld, M. (2024). Fostering assertiveness through role-play gaming case study. *Journal of Gaming & Virtual Worlds*, 16(1), 89–106. https://doi.org/10.1386/jgvw_00093_1
- Ardito, G., & Dron, J. (2024). The emergence of autonomy in intertwined learning environments: a model of teaching and learning. *Asia-pacific journal of teacher education*, 52(2), 241–264. <https://doi.org/10.1080/1359866X.2024.2325746>.
- Arenas, D. L., Viduani, A., & Araujo, R. B. (2022). Therapeutic use of role-playing game (RPG) in mental health: A scoping review. *Simulation & Gaming*, 53(3), 285–311. <https://doi.org/10.1177/10468781211073720>
- Arksey, H. and O'Malley, L., 2005. Scoping studies: towards a methodological framework. *International journal of social research methodology*, 8(1), pp.19–32. <https://doi.org/10.1080/1364557032000119616>

- Aromataris, E., Lockwood, C., Porritt, K., Pilla, B., & Jordan, Z. (Eds.). (2024). *JBIM Manual for Evidence Synthesis*. JBI. <https://doi.org/10.46658/JBIMES-24-01>
- Bateson, G. (2000). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. University of Chicago press.
- Bautista, K. A. L. (2022). Building Character by Building Characters: A Literature Review Examining the Efficacy of Tabletop Roleplay as a Creative Intervention for Developing Social Skills in Adolescents. *Expressive Therapies Capstone Theses*. https://digitalcommons.lesley.edu/expressive_theses/576
- Burrell, N. (2021). *A preliminary qualitative study of problem-solving skills developed through playing tabletop role playing games in young adults*. <http://cardinalscholar.bsu.edu/handle/20.500.14291/203029>
- Capobianco, D., & Manganello, F. (2025, October). Implementing tabletop role-playing games for workplace learning: The ADVENTURE framework in practice. In *European Conference on Games Based Learning* (Vol. 1, pp. 119-127). Academic Conferences International Limited. <https://doi.org/10.34190/ecgbl.19.1.4116>
- Causo, F., & Quinlan, E. (2021). Defeating dragons and demons: Consumers' perspectives on mental health recovery in role-playing games. *Australian Psychologist*, 56(3), 256-267. <https://doi.org/10.1080/00050067.2021.1890983>
- Clark, D. B., Tanner-Smith, E. E., & Killingsworth, S. S. (2016). Digital games, design, and learning: A systematic review and meta-analysis. *Review of educational research*, 86(1), 79-122. <https://doi.org/10.3102/0034654315582065>
- Clarke, S., Arnab, S., Morini, L., & Heywood, L. (2018). Remixing dungeons and dragons: 12th European Conference on Game Based Learning, ECGBL 2018. In M. Ciussi (Ed.), *Proceedings of the 12th European Conference on Game-Based Learning, ECGBL 2018* (Vols 2018-October, pp. 872–875). Dechema e.V.
- Clarke, S., Arnab, S., Morini, L., & Heywood, L. (2019). Dungeons and Dragons as a tool for developing student self-reflection skills. In M. Gentile, M. Allegra, & H. Söbke (Eds.), *Games and Learning Alliance: GALA 2018* (Lecture Notes in Computer Science, Vol. 11385, pp. 116–126). Springer. https://doi.org/10.1007/978-3-030-11548-7_10
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 416–437). Sage. <https://doi.org/10.4135/9781446249215.n21>
- Deterding, S., & Zagal, J. P. (Eds.). (2018). *Role-Playing Game Studies: Transmedia Foundations*. Routledge.
- Dewey, J. (2024). *Democracy and education*. Columbia University Press.

- Drachen, A., & Smith, J. H. (2008). Player talk—the functions of communication in multiplayer role-playing games. *Computers in Entertainment (CIE)*, 6(4), 1-36.
<https://doi.org/10.1145/1461999.1462008>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, 62(1), 107-115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Fioravanti, M. L., de Oliveira Sestito, C. D., de Deus, W. S., Scatalon, L. P., & Barbosa, E. F. (2021). Role-playing games for fostering communication and negotiation skills. *IEEE Transactions on Education*, 65(3), 384-393. <https://doi.org/10.1109/TE.2021.3117898>
- Fredriksson, U., & Hoskins, B. (2008). *Learning to learn what is it and can it be measured?*, Publications Office. <https://data.europa.eu/doi/10.2788/83908>
- Funk, S. (2021). Examining The Implications Of Tabletop Roleplaying Games For Use In Leadership Development: An Integrative Review. *All Student Scholarship*.
<https://digitalcommons.usm.maine.edu/etd/413>
- Haarman, S. (2022). Dungeons & Dragons & Dewey: The Potential for Dramatic Rehearsal and Civic Outcomes in Tabletop Role-Playing Games. *Philosophical Studies in Education*, 53, 56-70.
- Hazlett, N., Smith, L., Murray, E., & Duncan, A. (2024). Exploring Tabletop Role-Playing Games as Meaningful Occupations: A Qualitative Exploratory Study. *Occupational Therapy In Health Care*, 1-18. <https://doi.org/10.1080/07380577.2024.2403784>
- Henning, G., de Oliveira, R. R., de Andrade, M. T. P., Gallo, R. V., Benevides, R. R., Gomes, R. A. F., Fukue, L. E. K., Lima, A. V., de Oliveira, M. B. B. Z. N., de Oliveira, D. A. M., Werpp, M., Moraes, L., & Neto, F. L. (2024). Social skills training with a tabletop role-playing game, before and during the pandemic of 2020: In-person and online group sessions. *Frontiers in Psychiatry*, 14. <https://doi.org/10.3389/fpsyt.2023.1276757>
- Howell, D. (2023). Dealing with your dragons: Counseling through Dungeons and Dragons. *Educational Specialist, 2020-Current*. <https://commons.lib.jmu.edu/edspec202029/76>
- Hwang, G. J., & Chen, P. Y. (2022). Interweaving gaming and educational technologies: Clustering and forecasting the trends of game-based learning research by bibliometric and visual analysis. *Entertainment Computing*, 40, 100459.
<https://doi.org/10.1016/j.entcom.2021.100459>
- Kapitany, R., Hampejs, T., & Goldstein, T. R. (2022). Pretensive Shared Reality: From Childhood Pretense to Adult Imaginative Play. *Frontiers in Psychology*, 13.
<https://doi.org/10.3389/fpsyg.2022.774085>
- Kilmer, E., Rubin, J., Scanlon, M., & Kilmer, J. (2024). Therapeutically applied RPGs to support adolescent social connection and growth during the COVID-19 pandemic. *Journal of Creativity in Mental Health*, 19(2), 210-231.
<https://doi.org/10.1080/15401383.2023.2239703>

- Kim, J. W., & Hanneman, R. (2023). Teaching social dilemma through simulating cooperation: A classroom experiment. *Journal of University Teaching and Learning Practice*, 20(6), 1-21. <https://doi.org/10.53761/1.20.6.3>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
- LaLone, N., & Toups Dugas, P. O. (2024, May). Human Use of Vintage Beings: How to Harness the Shock of the Old. In *International Conference on Human-Computer Interaction* (pp. 220-246). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-60695-3_15
- Levac, D., Colquhoun, H. and O'brien, K.K., 2010. Scoping studies: advancing the methodology. *Implementation science*, 5, pp.1-9. <https://doi.org/10.1186/1748-5908-5-69>
- Lopes, R. P. (2015). City of dred—a tabletop RPG learning experience. In *7th International Conference on Education and New Learning Technologies (EDULEARN)* (pp. 6987-6995).
- Mackey, C. N. (2023a). *Perceptions of Skill Transference from Dungeons & Dragons to Personal, Social, and Work* [Doctoral dissertation, University of Arizona Global Campus]. ProQuest. https://media.proquest.com/media/hms/PFT/2/wSMdQ?_s=Nk9mB2VsGiPKFrWUTDguM9xkWt0%3D
- Mackey, C. N. (2023b, May 31-June 2). *RPGs, Simulations, and the Human Element* [Conference presentation]. 21st Industrial Simulation Conference (ISC"2023), University of Malta, Valletta, Malta.
- Markiewicz, R., Rahman, F., Apperly, I., Mazaheri, A., & Segaert, K. (2024). It is not all about you: Communicative cooperation is determined by your partner's theory of mind abilities as well as your own. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 50(5), 833. <https://doi.org/10.1037/xlm0001268>
- McKenzie, B. (2023). Dungeons and dragons and digital writing: A case study of worldbuilding. *Journal of University Teaching and Learning Practice*, 20(2), 1-19. <https://doi.org/10.53761/1.20.02.10>
- Mezirow, J. (2003). *Apprendimento e trasformazione*. Raffaello Cortina Editore.
- Muramatsu, J., & Ackerman, M. S. (1998). Computing, social activity, and entertainment: A field study of a game MUD. *Computer Supported Cooperative Work (CSCW)*, 7, 87-122. <https://doi.org/10.1023/A:1008636204963>
- Ott, N. B. (2022). Tabletop roleplaying games, and depression, and social anxiety. *Honors College*. 767. <https://digitalcommons.library.umaine.edu/honors/767>
- Pellegrini, F., & Vitali, C. M. (2021). *Ricognizione sintetica di quadri concettuali, framework teorici e modelli di standard delle competenze: il Modello LifeComp*. Roma, INAPP.

- Peters, M. D., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. *JBI evidence synthesis*, 18(10), 2119-2126.
<https://journals.lww.com/jbisrir/toc/2020/10000>
- Plass, J. L., Homer, B. D., & Kinzer, C. K. (2015). Foundations of game-based learning. *Educational psychologist*, 50(4), 258-283. <https://doi.org/10.1080/00461520.2015.1122533>
- Pollock, D., Peters, M. D., Khalil, H., McInerney, P., Alexander, L., Tricco, A. C., Evans, C., de Moraes, É. B., Godfrey, C. M., Pieper, D., Saran, A., Stern, C., & Munn, Z. (2023). Recommendations for the extraction, analysis, and presentation of results in scoping reviews. *JBI evidence synthesis*, 21(3), 520-532.
<https://journals.lww.com/jbisrir/toc/2023/03000>
- Reissner, S., & Armitage-Chan, E. (2024). Manifestations of professional identity work: an integrative review of research in professional identity formation. *Studies in Higher Education*, 49(12), 2707-2722. <https://doi.org/10.1080/03075079.2024.2322093>
- Sailer, M., & Homner, L. (2020). The gamification of learning: A meta-analysis. *Educational psychology review*, 32(1), 77-112. <https://doi.org/10.1007/s10648-019-09498-w>
- Sala, A., Punie, Y., Garkov, V., & Cabrera, M. (2020). *LifeComp: The European framework for personal, social and learning to learn key competence* (No. JRC120911). Joint Research Centre. <https://dx.doi.org/10.2760/302967>
- Sezen, D., Akcali, A., Sezen, T. I., Perks, S., & Stewart, P. (2024). Exploring women's role in creative industries through collaborative action research using tabletop role-playing games. In D. Crawford, J. Foss, N. Lambert, M. Reed, & J. Kriebel (Eds.), *Technology, innovation, entrepreneurship and education. TIE 2023* (Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Vol. 575, pp. 34–50). Springer. <https://doi.org/10.1007/978-3-031-59383-3>
- Shoenberger, M. (2024). Tertiary learning usage of tabletop roleplaying games: Affordances and challenges. In T. Bowell, N. Pepperell, A. Richardson, & M.-T. Corino (Eds.), *Revitalising higher education: Insights from Te Puna Aurei LearnFest 2022* (pp. 80–86). Cardiff University Press. <https://doi.org/10.18573/conf2.j>
- Sousa, C., Rye, S., Sousa, M., Torres, P. J., Perim, C., Mansuklal, S. A., & Ennami, F. (2023). Playing at the school table: Systematic literature review of board, tabletop, and other analog game-based learning approaches. *Frontiers in Psychology*, 14.
<https://doi.org/10.3389/fpsyg.2023.1160591>
- Spinelli, L. (2018). *Tabletop role-playing games and social skills in young adults* [Dissertation, Honors College Theses, 192]. Pace University Digital Repository.
https://digitalcommons.pace.edu/honorscollege_theses/192

- Taylor, N. E. (2021). The enduring and contagious optimism of change makers. *Journal of CSWB*, 6(1), 1-1. <https://doi.org/10.35502/jcswb.188>
- Torres-Rodríguez, F. A., & Martínez-Granada, L. (2022). Speaking in Worlds of Adventure: Tabletop Roleplaying Games within the EFL Classroom. *HOW*, 29(1), 105-128. <https://doi.org/10.19183/how.29.1.653>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Kastner, M., Levac, D., Ng, C., Pearson Sharpe, J., Wilson, K., Kenny, M., Warren, R., Wilson, C., Stelfox, H. T., & Straus, S. E. (2016). A scoping review on the conduct and reporting of scoping reviews. *BMC medical research methodology*, 16, 1-10. <https://doi.org/10.1186/s12874-016-0116-4>
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., Godfrey, C. M., Macdonald, M. T., Langlois, E. V., Soares-Weiser, K., Moriarty, J., Clifford, T., Tunçalp, Ö., & Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473. <https://doi.org/10.7326/M18-0850>
- Veldhuis, M., Koning, M., & Stikkolorum, D. (2021, November). A quest to engage computer science students: Using dungeons & dragons for developing soft skills. In *Proceedings of the 10th Computer Science Education Research Conference* (pp. 5-13). <https://doi.org/10.1145/3507923.3507927>
- Villalba, E. (2017). Critical thinking in relation to creativity. In *Reference module in neuroscience and biobehavioral psychology* (pp. 1–4). Elsevier. <https://doi.org/10.1016/B978-0-12-809324-5.06160-5>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- Winardy, G. C. B., & Septiana, E. (2023). Role, play, and games: Comparison between role-playing games and role-play in education. *Social Sciences & Humanities Open*, 8(1), 100527. <https://doi.org/10.1016/j.ssaho.2023.100527>
- Winardy, G. C. B., Septiana, E., & Pranawati, S. Y. (2024). Emotional Experiences in Online, Text-Based Tabletop Role-Playing Games. *Simulation & Gaming*, 55(5), 812-836. <https://doi.org/10.1177/10468781241250064>
- You, X., Taveekitworachai, P., Chen, S., Can Gursesli, M., Li, X., Xia, Y., & Thawonmas, R. (2024, May). Dungeons, dragons, and emotions: A preliminary study of player sentiment in LLM-driven ttrpgs. In *Proceedings of the 19th International Conference on the Foundations of Digital Games* (pp. 1-4). <https://doi.org/10.1145/3649921.3656991>

- Yuliawati, L., Wardhani, P. A. P., & Ng, J. H. (2024). A Scoping Review of Tabletop Role-Playing Game (TTRPG) as Psychological Intervention: Potential Benefits and Future Directions. *Psychology Research and Behavior Management*, 17, 2885–2903.
<https://doi.org/10.2147/PRBM.S466664>
- Zdravkova, K. (2014). Learning computer ethics and social responsibility with tabletop role-playing games. *Journal of Information, Communication and Ethics in Society*, 12(1), 60-75.
<https://doi.org/10.1108/JICES-09-2013-0038>